



USER/INSTALLATION MANUAL

MODELS: QSFMI-09A

QSFMI-12A QSFMI-18A

6. Function and Control

6.1 Remote Control Operations



1 ON/OFF

Press it to start or stop operation.

² MODE

Press it to select operation mode (AUTO/COOL/DRY/FAN/HEAT).

3 +

Press it to increase temperature setting.

4 -

Press it to decrease temperature setting.

5 FAN

Press it to set fan speed.

6

Press it to set swing angle.

7 TIMER ON

Press it to set auto-on timer.

8 TIMER OFF

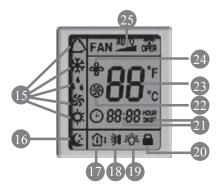
Press it to set auto-off timer.

9 CLOCK

Press it to set clock.

- 10 X-FAN (X-FAN is the alternative expression of BLOW for the purpose of understanding.)
- 11 TEMP
- 12 TURBO
- 13 SLEEP
- 14 LIGHT

Press it to turn on/off the light.



15 MODE icon:

If MODE button is pressed, current operation mode icon △ (AUTO), ♣ (COOL), ♣ (DRY), ♣ (FAN) or ☼ (HEAT is only for heat pump models) will show.

16 SLEEP icon:

cis displayed by pressing the SLEEP button. Press this button again to clear the display.

17 TEMP icon:

Pressing TEMP button, \bigcirc (set temperature), \bigcirc (indoor ambient temperature), \bigcirc (outdoor ambient temperature) and blank is displayed circularly.

18 Up & down swing icon:

is displayed when pressing the up & down swing button. Press this button again to clear the display.

19 LIGHT icon:

is displayed by pressing the LIGHT button.Press LIGHT button again to clear the display.

20 LOCK icon:

is displayed by pressing "+" and "-" buttons simultaneously. Press them again to clear the display.

21 SET TIME display:

After pressing TIMER button, ON or OFF will blink. This area will show the set time.

22 TURBO icon:

★ is displayed when pressing the TURBO button. Press this button again to clear the display.

23 DIGITAL display:

This area will show the set temperature. During defrosting operation, "H1" will be displayed.

24 X-FAN icon:

❖ is displayed when pressing the X-FAN button. Press this button again to clear the display.

25 FAN SPEED display:

Press FAN button to select the desired fan speed setting(AUTO-Low-Med-High). Your selection will be displayed in the LCD windows, except the AUTO fan speed.

Remote Controller Description

1 ON/OFF:

Press this button to turn on the unit. Press this button again to turn off the unit.

2 MODE:

Each time you press this button, a mode is selected in a sequence that goes from AUTO, COOL, DRY, FAN, and HEAT *, as the following:

AUTO ▶ COOL ▶ DRY▶FAN ▶ HEAT*

*Note: Only for models with heating function.

After energization, AUTO mode is defaulted. In AUTO mode, the set temperature will not be displayed on the LCD, and the unit will automatically select the suitable operation mode in accordance with the room temperature to make indoor room comfortable.

3 +:

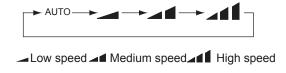
Press this button to increase set temperature. Hold it down for above 2 seconds to rapidly increase set temperature. In AUTO mode, set temperature is not adjustable.

4 -:

Press this button to decrease set temperature. Hold it down for above . 2 seconds to rapidly decrease set temperature. In AUTO mode, set temperature is not adjustable.

5 **FAN**:

This button is used for setting fan speed in the sequence that goes from AUTO, - , - , - , - to then back to Auto.



6

Press this button to set up & down swing angle, which circularly changes as below:

This remote controller is universal. If any command $\Rightarrow \parallel$, $\Rightarrow \parallel$ or $\Rightarrow \parallel$ is sent out, the unit will carry out the command as $\Rightarrow \parallel$

indicates the guide louver swings as:

`|| \$`|| **\$-||**\$_|||\$_||

7 TIMER ON:

Press this button to initiate the auto-ON timer. To cancel the auto-timer program, simply press this button again. After pressing this button, disappears and "ON" blinks . 0 0:00 is displayed for ON time setting. Within 5 seconds, press + or - button to adjust the time value. Every press of either button changes the time setting by 1 minute. Holding down either button rapidly changes the time setting by 1 minute and then 10 minutes. Within 5 seconds after setting, press TIMER ON button to confirm.

8 TIMER OFF:

Press this button to initiate the auto-off timer. To cancel the auto-timer program, simply press the button again.TIMER OFF setting is the same as TIMER ON.

9 CLOCK:

10 X-FAN:

Pressing X -FAN button in COOL or DRY mode, the icon % is displayed and the indoor fan will continue operation for 10 minutes in order to dry the indoor unit even though you have turned off the unit.

After energization, X-FAN OFF is defaulted. X-FAN is not available in AUTO, FAN or HEAT mode.

11 TEMP:

Press this button, could select displaying the indoor setting temperature or indoor ambient temperature. When the indoor unit firstly power on it will display the setting temperature, if the temperature's displaying status is changed from other status to " (1) ", displays the ambient temperature, 5s later or within 5s, it receives other remote control signal that will return to display the setting temperature. If the users haven't set up the temperature displaying status, that will display the setting temperature.

12 TURBO:

Press this button to activate / deactivate the Turbo function which enables the unit to reach the preset temperature in the shortest time. In COOL mode, the unit will blow strong cooling air at super high fan speed. In HEAT mode, the unit will blow strong heating air at super high fan speed.

13 SLEEP:

Press this button to go into the SLEEP operation mode. Press it again to cancel this function. This function is available in COOL, HEAT (Only for models with heating function) or DRY mode to maintain the most comfortable temperature for you.

14 LIGHT:

Press LIGHT button to turn on the display's light and press this button again to turn off the display's light. If the light is turned on , $\tilde{\phi}$ is displayed. If the light is turned off, $\tilde{\phi}$ disappears.

- 15 Combination of "+" and "-" buttons: About lock
 - Press "+" and "-" buttons simultaneously to lock or unlock the keypad. If the remote controller is locked, is displayed. In this case, pressing any button, blinks three times.
- 16 Combination of "MODE" and "-" buttons: About switch between Fahrenheit and Centigrade At unit OFF, press "MODE" and "-" buttons simultaneously to switch between $\mathbb C$ and $\mathbb F$.

Replacement of Batteries

1.Remove the battery cover plate from the rear of the remote controller.

(As shown in the figure)

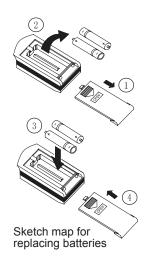
- 2. Take out the old batteries.
- 3.Insert two new AAA1.5V dry batteries, and pay attention to the polarity.
- 4. Reinstall the battery cover plate.

★Notes:

•When replacing the batteries, do not use old or different types of batteries. Otherwise, it may cause malfunction.

•If the remote controller will not be used for a long time, please remove batteries to prevent batteries from leaking.

- •The operation should be performed in its receiving range.
- •It should be kept 3.3ft. away from the TV set or stereo sound sets.
- •If the remote controller does not operate normally, please take the batteries out and reinsert them after 30 seconds. If it still can't operate properly, replace the batteries.



6.2 Description of Each Control Operation

QSFMI-09A QSFMI-12A QSFMI-18A

- 1. Temperature Parameters
- Indoor preset temperature (Tpreset)
- ◆ Indoor ambient temperature (Tamb.)
- 2. Basic Functions

Once energized, in no case should the compressor be restarted within less than 3 minutes. In the situation that memory function is available, for the first energization, if the compressor is at stop before de-energization, the compressor will be started without a 3-minute lag; if the compressor is in operation before de-energization, the compressor will be started with a 3-minute lag; and once started, the compressor will not be stopped within 6 minutes regardless of changes in room temperature;

- (1) Cooling Mode
- 1) Working conditions and process of cooling

When Tamb.≥Tpreset, the unit will enter cooling operation, in which case the indoor fan, the outdoor fan and the compressor will work and the indoor fan will run at preset speed.

When Tamb.=Tpreset-3.6°F, the compressor will run in 15Hz for continuous 15 minutes; if Tamb.=Tpreset-3.6°F is not changed after that, the compressor will stop to run;

When Tamb.≤Tpreset-5.4°F, the compressor will stop to run, the outdoor fan motor will stop to run after 30 seconds and the indoor fan motor will run at set fan speed;

When Tpreset-3.6°F < Tamb. < Tpreset, the unit will keep the previous running status.

Under this mode, the four-way valve will be de-energized and temperature can be set within a range from 61 to 86°F.

If the compressor is shut down for some reason, the indoor fan and the swing device will operate at original state.

2 Protection

◆ Antifreeze protection

Under cooling and dehumidifying mode, 6 minutes after the compressor is started:

If T evap≤35.6°F, the compressor will operate at reduced frequency.

If T evap≤30.2°F is detected for durative 3 minutes, the compressor will stop, and after 30 seconds, the outdoor fan will stop; and under cooling mode, the indoor fan and the swing motor will remain at the original state.

If T evap. ≥50°F and the compressor has remained at OFF for at least 3 minutes, the compressor will resume its original operation state.

◆ Total current up and frequency down protection

When total current $I_{total} \ge 6A$, increase frequency is allowed; when total current $I_{total} \ge 7A$, increasing frequency is prohibited; when total current $I_{total} \ge 8A$, the unit operates by decreasing frequency. When total current $I_{total} \ge 9A$, the compressor stops operation, and indoor fan will stop operation after 30s.

- (2) Dehumidifying Mode
- ① Working conditions and process of dehumidifying

If Tamb>Tpreset, the unit will enter cooling and dehumidifying mode, in which case the compressor and the outdoor fan will operate and the indoor fan will run at low speed.

If Tpreset -3.6°F≤Tamb≤Tpreset, the compressor remains at its original operation state.

If Tamb.< Tpreset -3.6°F, the compressor will stop, the outdoor fan will stop with a time lag of 30s, and the indoor fan will operate at low speed.

2 Protection

Protection is the same as that under the cooling mode.

- ((3) Heating Mode
- ① Working conditions and process of heating
- ① If Tpreset-(Tindoor ambient- Tcompensatory) ≥1.8°F, the unit enters heating mode, in which case the compressor, the outdoor fan and the 4-way valve will operate simultaneously;
- ② If -3.6°F<Tpreset-(Tindoor ambient- Tcompensatory) <1.8°F, the unit will maintain its original operating status.
- ③ If Tpreset-(Tindoor ambient- Tcompensatory) ≤-3.6°F, the compressor will stop and the outdoor fan will stop with a time lag of 30s;
- ④ If turning off the unit when the unit is in heating mode or switching heating mode to another mode, the 4-way valve will be powered off after the compressor stops for 2min (the compressor has already started in heating mode).
- ⑤ If Toutdoor ambient>86°F, the compressor will stop and the outdoor fan will stop with a time lag of 30s
- ® When the compressor has started, if switching cooling or dry mode to heating mode, the 4-way valve will be energized with a time lag of 2-3min.

Note: Tcompensatory is determined by indoor unit and outdoor unit. If the indoor unit controls Tcompensatory, Tcompensatory is determined by the data sent by indoor unit to outdoor unit; if the indoor unit doesn't control Tcompensatory, the outdoor unit will control Tcompensatory and the default data is 5.4°F. (there is instruction in the communication protocol to describe if the Tcompensatory is controlled by indoor unit)

Function and Control

- 2 Condition and process of defrost
- (1)When Toutdoor ambient≤41°F and the compressor has run for 3h, if Toutdoor tube<0°F is continuously detected for 1min, the unit will enter defrosting; [Note: the accumulated time is cleared if one of the below condition is met: Toutdoor ambient>41°F, the compressor starts up after switching to cooling or dry mode, when defrosting is finished; for other situations besides above conditions, the accumulated time will not be cleared (including the unit stops when reaching the temperature point, the unit stops for protection, switching to fan mode,etc.)]
- (2) When duration of successive heating operation is more than 45 minutes, or accumulated heating time more than 90 minutes, and one of the following conditions is reached, the unit will enter the defrost mode after 3 minutes:
- a. Toutdoor ambient>41°F, Toutdoor tube≤28.4°F;
- b. 28.4°F≤Toutdoor ambient<41°F, Toutdoor tube≤21.2°F;
- c. 23°F≤Toutdoor ambient<28.4°F, Toutdoor tube≤17.6°F;
- d. 14°F≤Toutdoor ambient<23°F, Toutdoor tube- Tcompensatory≤(Toutdoor ambient-5.4°F)
- e. Toutdoor ambient<14°F, Toutdoor tube- Tcompensatory≤(Toutdoor ambient-5.4°F)

After energization, for the first defrosting, Tcompensation=0°F; if it is not the first time of defrosting, Tcompensation will be determined by Toutdoor pipe when quitting defrosting last time;

- a. Toutdoor pipe >35.6°F, Tcompensation=0°F;
- b. Toutdoor pipe ≤35.6°F, Tcompensation=5.4°F.
- (3) During defrosting, if operation time for compressor doesn't reach 3min, the defrosting will not be entered in the subsequent 2 hours. At that time, compressor stops operation and in 30s later, the outdoor fan will stop operation; in another 30s, 4-way valve will stop operation; in 30s later, compressor will increase its frequency for defrosting. When defrosting lasts for 450s, or Toutdoor pipe ≥50°F, compressor will decrease its frequency. In 30s later, compressor will stop operation; in another 30s, 4-way valve will be started up. In 60s later, compressor and outdoor fan will operate. Frequency for defrosting is 85Hz.
- ③ Protection
- ◆ Cold air prevention

The unit is started under heating mode (the compressor is ON):

- ① In the case of T indoor amb. <75.2°F: if T tube≤104°F and the indoor fan is at stop state, the indoor fan will begin to run at low speed with a time lag of 2 minutes. Within 2 minutes, if T tube>104°F, the indoor fan also will run at low speed; and after 1-minute operation at low speed, the indoor fan will be converted to operation at preset speed. Within 1-minute low speed operation or 2-minute non-operation, if T tube>107.6°F, the fan will run at present speed.
- ② In the case of T indoor amb. ≥75.2°F: if T tube≤107.6°F, the indoor fan will run at low speed, and after one minute, the indoor fan will be converted to preset speed. Within one-minute low speed operation, if T tube>107.6°F, the indoor fan will be converted to preset speed.

Note: T indoor amb. indicated in ① and ② refers to, under initially heating mode, the indoor ambient temperature before the command to start the compressor is performed according to the program, or after the unit is withdrawn from defrost, the indoor ambient temperature before the defrost symbol is cleared.

◆ Total current up and frequency down protection

When total current $I_{total} \ge 6A$, increase frequency is allowed; when total current $I_{total} \ge 7A$, increasing frequency is prohibited; when total current $I_{total} \ge 8A$, the unit operates by decreasing frequency. When total current $I_{total} \ge 9A$, the compressor stops operation, and indoor fan will stop operation after 30s.

(4) Fan Mode

Under the mode, the indoor fan will run at preset speed and the compressor, the outdoor fan, the four-way valve and the electric heater will stop.

Under the mode, temperature can be set within a range of 61 - 86°F.

- (5) AUTO Mode
- ① Working conditions and process of AUTO mode
- a. When T ambient ≥78.8°F, the unit will operate in Cool mode. The set temperature is 77°F.
- b. When T ambient ≤71.6°F, the heat pump unit will operate in Heat mode., set temperature be 68°F; the cooling only unit will operate in Fan mode, set temperature be 77°F.
- c. When 73.4°F≤T ambient ≤77°F, the unit will operate in the previous state. If it is energized for the first time, it will operate in Fan mode.
- d. Under auto mode, if it's cooling mode, operation frequency is same as that under cooling mode; if it's heating mode, operation frequency is same as that under heating mode.
- 2 Protection
- a. In cooling operation, protection is the same as that under the cooling mode;
- b. In heating operation, protection is the same as that under the heating mode;
- c. When ambient temperature changes, operation mode will be converted preferentially. Once started, the compressor will remain unchanged for at least 6 minutes.

- (6) Common Protection Functions and Fault Display under COOL, HEAT, DRY and AUTO Modes
- 1 Overload protection

T tube: measured temperature of outdoor heat exchanger under cooling mode; and measured temperature of indoor heat exchanger under heating mode.

- 1) Cooling overload
- a. If T tube≤125.6°F, the unit will return to its original operation state.
- b. If T tube≥131°F, frequency rise is not allowed.
- c. If T tube≥136.4°F, the compressor will run at reduced frequency.
- d. If T tube≥143.6°F, the compressor will stop and the indoor fan will run at preset speed.
- 2) Heating overload
- a. If T tube≤122°F, the unit will return to its original operation state.
- b. If T tube≥127.4°F, frequency rise is not allowed.
- c. If T tube≥132.8°F, the compressor will run at reduced frequency.
- d. If T tube≥140°F, the compressor will stop and the indoor fan will blow residue heat and then stop.
- 2 Exhaust temperature protection of compressor

If exhaust temperature ≥208.4°F, frequency is not allowed to rise.

If exhaust temperature ≥217.4°F, the compressor will run at reduced frequency.

If exhaust temperature ≥230°F, the compressor will stop.

If exhaust temperature ≤194°F and the compressor has stayed at stop for at least 3 minutes, the compressor will resume its operation.

③ Communication fault

If the unit fails to receive correct signals for durative 3 minutes, communication fault can be justified and the whole system will stop.

4 Module protection

Under module protection mode, the compressor will stop. When the compressor remains at stop for at least 3 minutes, the compressor will resume its operation. If module protection occurs six times in succession, the compressor will not be started again.

(5) Overload protection

If temperature sensed by the overload sensor is over 239°F, the compressor will stop and the outdoor fan will stop with a time lag of 30 seconds. If temperature is below 203°F, the overload protection will be relieved.

(6) DC bus voltage protection

If voltage on the DC bus is below 150V or over 420V, the compressor will stop and the outdoor fan will stop with a time lag of 30 seconds. When voltage on the DC bus returns to its normal value and the compressor has stayed at stop for at least 3 minutes, the compressor will resume its operation.

- 3. Other Controls
- (1) ON/OFF

Press the remote button ON/OFF: the on-off state will be changed once each time you press the button.

(2) Mode Selection

Press the remote button MODE, then select and show in the following ways: AUTO, COOL, DRY, FAN, HEAT, AUTO.

(3) Temperature Setting Option Button

Each time you press the remote button TEMP+ or TEMP-, the setting temperature will be up or down by 1.8°F. Regulating Range: 61 - 86°F, the button is useless under the AUTO mode.

(4) Time Switch

You should start and stop the machine according to the setting time by remote control.

- (5) SLEEP State Control
- a. When the air conditioner is under the mode of COOL, DRY, and the SLEEP mode has been set well, after the SLEEP state keeps about 1 hour, the pre-setting T will raise 1.8°F, and it will raise 1.8°F again after 2 hours, so it raise 3.6°F in 2 hours, then it will run on at the setting temperature and wind speed.
- b. When the air conditioner is under the mode of HEAT, and the Timer has been set well, after the SLEEP state keeps about 1 hour, the pre-setting T will reduce 1.8°F, and it will reduce 1.8°F again after 2 hours, so it reduce 3.6°F in 2 hours, then it will run on at the setting temperature and wind speed.
- c. The setting temperature keeps the same under the FAN mode and AUTO mode.

(6) Indoor Fan Control

The Indoor Fan can be set as HIGH, MED, LOW by remote control, and the Indoor Fan will be respectively run at high, medium, low speed. It will also be set as AUTO, and the Indoor Fan is as the followings at the automatic wind speed.

Cooling mode:

Tring ≥ T setting + 3.6°F, high speed;

T setting - 3.6°F<T ring<T setting + 3.6°F, medium speed;

T ring≤ T setting - 3.6°F, low speed.

Sending wind mode:

Tring> T setting+ 7.2°F, high speed;

T setting +3.6°F≤T ring≤T setting + 7.2°F, medium speed;

T ring<T setting +3.6°F, low speed.

Moisture removal mode: force to be set as the low speed

Heating mode:

T ring≤ T setting + 1.8°F, high speed;

T setting +1.8°F<T ring<T setting + 9°F, medium speed;

T ring ≥T setting + 3.6°F, low speed.

(7) Buzzer Control

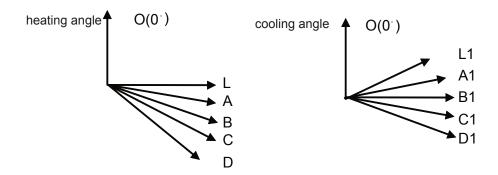
The buzzer will send a "Di" sound when the air conditioner is powered up or received the information sent by the remote control or there is a button input, the single tube cooler doesn't receive the remote control ON signal under the mode of heating mode.

(8) Auto button

If the controller is on, it will stop by pressing the button, and if the controller is off, it will be automatic running state by pressing the button, swing on and light on, and the main unit will run based on the remote control if there is remote control order.

(9) Up-and-Down Swinging Control

When power on, the up-and-down motor will firstly move the air deflector to counter-clockwise, close the air outlet. After starting the machine, if you don't set the swinging function, heating mode and auto-heating mode, the up-and-down air deflector will move to D clockwise; under other modes, the up-and-down air deflector will move to L1. If you set the swinging function when you start the machine, then the wind blade will swing between L and D. The air deflector has 7 swinging states: Location L, Location A, Location B, Location D, Location D, stop at any location between L-D (the included angle between L~D is the same). The air deflector will be closed at 0 Location, and the swinging is effectual only on condition that setting the swinging order and the inner fan is running. The indoor fan and compressor may get the power when air deflector is on the default location.



(10) Display

① Operation pattern and mode pattern display

All the display patterns will display for a time when the power on, the operation indication pattern will display in red under standby status. When the machine is start by remote control, the indication pattern will light and display the current operation mode (the mode light includes: Cooling, heating and dehumidify). If you close the light key, all the display patterns will close.

2 Double-8 display

According to the different setting of remote control, the nixie light may display the current temperature (the temperature scope is from 61 to 86°F) and indoor ambient temperature. The heating and air supply temperature will display 77°F under auto-mode, the temperature will display 64.4°F, under the heating mode, and the temperature will display H1 under the defrosting mode.(If you set the fahrenheit temperature display, the nixie light will display according to fahrenheit temperature)

(11) Drying Function

You may start or stop the drying function under the modes of cooling and dehumidify at the starting status (The modes of automatism, heating and air supply do not have drying function). When you start the drying function, after stop the machine by pressing the switch button, you should keep running the inner fans for 10 minutes under low air damper (The swing will operate as the former status within 10 minutes, and other load is stopped), then stop the entire machine; When you stop the drying function, press the switch button will stop the machine directly. When you start the drying function, operating the drying button will stop the inner fans and close the guide louver.

(12) Memory function when interrupting the power supply

Memory content: mode, swing function, light, set temperature and wind speed. After interrupted the power supply, the machine will start when recovering the power according to the memory content automatically. If the last remote control command has not set the timed function, the system will remember the last remote control command and operate according it. If the last remote control command has set timed function and the power supply is interrupted before the timed time, the system will remember the timed function of the last remote control command, the timed time will recounted form power on. If the last remote control command has set timed function, the time is out and the system is start or stop according to the set time when the power supply is interrupted, the system will remember the operation status before the power supply was interrupted, and do not carry out timed action; The timed clock will not remembered.

(13)Control of Outdoor Electric Heating Band

If not in heating mode or temp sensor has malfunction, electric heating bands of compressor and of condenser will stop operation, otherwise, the below control logic will be followed.

- 1. Control of Compressor Electric Heating Band
- a) Startup condition: compressor is powered off while outdoor ambient temperature≤23°F;
- b) Stop condition: the compressor will be turned off under any of the condition;
- i. Compressor is powered on:
- ii. Compressor is powered off while outdoor ambient temperature≥28.4°F;
- c) Outdoor ambient temp. sensor is with malfunction, the electric heating band will stop operation.
- 2. Condenser electric heating band control
- 1) When Toutdoor ambient≤33.8°F, the condenser electric heating band will start operation;
- 2) The chassis electric heating band will operate during the course from the unit starts defrosting to defrosting finished and the compressor start
- operation, after 3mins operation of compressor and Toutdoor ambient≥37.4°F, electric heating stop operation.
- 3) When Toutdoor ambient≥37.4°F, condenser electric heating band stop operation.
- 4) When 33.8°F<Toutdoor ambient<37.4°F, condenser electric heating band keep its original status.

When there's malfunction of outdoor ambient temp, sensor, the electric heating band stop operation and restart operation 2mins later.

QSFMI-09A QSFMI-12A QSFMI-18A

Indoor Part

- 1.Basic function of system
- (1)Cooling mode
- 1.Under this mode, fan motor, swing will work under setting status, the temp. range is 61-86°F.
- 2.Outdoor unit malfunction or unit stop running, indoor unit will keep original running status, malfunction displayed.
- 3.When0(Tset-Tamb.), if indoor fan motor is highspeed,thatthe fanmotorist runninginmiddle speed, the middle speed or low speed will be maintained;(this condition should be executed when compressor start up);the super high speed will not rotate; When (Tamb-Tset) ≥33.8°F the fan will return to the setting fan speed.

(2)Drying mode

- 1.Under thismode, fan motor will run atlow speed, swing will work at setting status, setting temp. range is61-86 °F.
- 2.Outdoor unit malfunction or protection, unit will stop, indoor unit will keep original running status, malfunction displayed.
- (3)Fan mode

Under this mode,indoor fan motor couldbe setted athigh,middle,low or auto speed,compresso,outdoor unit and valve will stop to run. Under this mode, temp. range should be 61-86 °F.

- (4)Heating mode
- 1. Under this mode, temp. range should be 61-86 °F.
- 2. Working condition and procedure of heating mode: When unit turn on and enter into Heating mode, indoor unit enter into anti-cool wind mode, when unit is stop running, and indoor fan motor turns on, blowing heat will act. 3. Protection function, under heating mode, compressor will stop to run due to malfunction happened, indoor fan motor will blow surplus heat.
- 4.Defrosting control: When receiving the defrosting signal from outdoor unit, displayer will display H1,10s later, indoor fan motor will stop to run.
- 5.Anti-coold wind function
- 6.Blow heat air function
- a.lf heating temp. meets the compressor stop running condition, compressors, outdoor fan motor will stop to run, the upper and lower guide louver will rotate to horizontal position L, indoor fan motor run at setting fan speed for 60s, then the indoor fan motor will stop to run. b.Due to 内风机 block running, the air guide board will keep the position when it stopping. (under each mode),
- other malfunction unit will stop to run, the upper and lower air guide louver will rotate to horizontal position L,

indoor fan unit will run at setting fan speed and run for 60s, indoor fan unit will stop to run.

- (5)Auto mode
- 1. When Tamb≥78.8°F, select the cooling mode, at this time, the setting temp. is 77 °F.
- 2.Cooling and heating units: Tamb≤71.6°F. will run at heating mode, at this time, the setting temp. is 68-73 °F.
- 3. Cooling only unit: When Tamb≤71.6 °F. it will run at Fan mode, the setting temp. is 77 °F.
- 4. When 73.4°F≤Tindoor amb. ≤ 77 °F, firstly enter into auto mode and run at auto fan speed,

other modes will run at auto mode, will keep the previous running mode. (When entering into Dehumidifying mode,

it will run at auto fan speed)

- 2. Display state of indoor indicators
- (1) State of indoor display board
- 1. When the unit is powered on, all patterns will be displayed and then only power indicator is on. When the unit is turned on with a remote controller, the operating indicator is on and operation mode which is set currently is displayed.
- 2. In defrosting mode, "H1" is displayed on "Double 8".
- 3. Set temperature is displayed on "Double 8".
- Display of operation patterns and mode patterns

When the unit is powered on, all patterns will be displayed and the standby operation indicator will become red. When the unit is turned on through a remote controller, the operation indicator is light. At the same time, operating mode patterns (mode indicators include cooling, heating and dehumidification modes) set currently are displayed, and dynamic display patterns of wind speed are displayed. If the light button is switched off, all display will be turned off.

- •Temperature display control mode of separated air conditioner
- ①When user sets the remote controller at set temperature display, currently set temperature will be displayed.
- ②Only when remote signals are converted from other display states into indoor ambient temperature display state, the remote controller will display indoor ambient temperature for 5 seconds and then return to set temperature display.
- ③Only when remote signals are converted from other display states into outdoor ambient temperature display state, the remote controller will display outdoor ambient temperature for 5 seconds and then return to set temperature display.
- (4) If the controller is lack of outdoor display functions, as the signal is received, set temperature will be displayed.
- 5When the unit is turned off, temperature display will be compulsively set at given temperature by the controller. When the unit is turned on, patterns as set by remote signals will be displayed.
- ⑥If user does not set up temperature display state, given temperature will be displayed.

- (2) Failure display of indoor unit
- 1. Requirements for failure display When multiple failures appear at the same time, failure protection codes shall be displayed alternatively.
- ①Hardware failures shall be displayed immediately, referring to requirements in "Failure State Display Table";
- ②Operation states shall be displayed immediately, referring to requirements in "Failure State Display Table";
- 3)Other failures shall be displayed 200s after the compressor stops, referring to requirements in "Failure State Display Table". (Note: in the case that the unit is switched off with the remote controller, or the compressor is switched on again, failure display waiting time (200s) shall be cleared.)
- Frequency limitation and reduction states shall be displayed by means of remote calling.
- 2. Failure display control Indicator failure display shall be kept synchronous with Double 8 failure display, that is, during indicator blinking, failure code corresponding to such indicator shall be displayed on Double 8.
- 3. Method of remote calling of failure display

Entering the failure remote calling mode: push the light button four times within 3s to call out relevant failure protection code; Quit the failure remote calling mode: push the light button four times within 3s or call out failure display to enter it for 5 minutes and then quit.

- 3. Other control targets
- (1) Up and down wind blow functions

When the unit is powered on, the up and down wind blow motor will turn a wind deflector anti-clockwise to Position 0 to shut down the air outlet. When the unit is switched on and wind blow function is not preset, under the heating mode, up and down wind blades will turn clockwise to position D; and under other modes, the up and down wind blades will turn clockwise to position L. If wind blow function is set at the same time as the unit is switched on, the wind blades will swing between positionL and D. The wind blades can be kept in seven states: position L, position A, position B, position C, position D, swing betweenposition L and D, stop at one position from L to D. When the unit is turned off, the wind deflector will be closed up to position 0. Wind blow action is effective only when wind blow commands are set and the indoor unit is running.

Note: When the wind blades are set at position L to B, position A to C, or position B to D through remote setting, the wind deflector will swing between position L and D. L—A—B—C—D.

(2) Buzzer

When the controller is powered on, signals from a remote controller are received, or the auto button is pushed, a buzzer will give out prompt tone.

(3) Auto button

When the button is pushed, the unit will operate in auto mode and the indoor fan will run in auto state. When the indoor fan is running, the wind blow motor will work. When the button is pushed again, the unit will be switched off. At the same time as the button is pushed, the whole unit will be powered on and enter into fast test mode; when the unit is powered on and detects for continuous 20s (such time shall not be fast tested) that the auto button is pushed, and if the unit is currently at fast test state, the unit will quit the fast test state.

(4)Sleep function

In this mode, the unit will select the suitable sleep curve to run according to the different setting temperature.

(5) Timing function

The main board integrates general timing and moment timing. Such two timing functions can be selected through a remote controller on which different functions are arranged.

1. General timing:

Timing start: timing start can be set when the unit is off. When preset time is reached, the controller will operate in a preset mode. Timing can be set at an interval of 0.5 hour in a scope of 0.5 - 24 hours.

Timing stop: timing stop can be set when the unit is on. When preset time is reached, the system will be turned off. Timing can be set at an interval of 0.5 hour in a scope of 0.5 - 24 hours.

2. Moment timing

Timing start: if timing start is set when the system is at operation state, the system will continue to operate; if timing start is set when the system is at stop, as the preset time is reached, the system will start to run in preset mode. Timing stop: if timing stop is set when the system is at stop state, the system will keep standby; if timing stop is set when the system is in operation, as the preset time is reached, the system will stop running.

Timing change:

When the system is in timing mode, start and stop can be set through the On/Off button on the remote controller; or timing time can be reset and the system will operate according to the latest setting. When the system is in operation and both timing start and stop are set, the system will stay at currently set operation state. When preset timing stop time is reached, the system will stop working. When the system is at stop state and both timing start and stop are set, the system will keep at stop state. When preset timingstart time is reached, the system will start operation. From then on, the system will operate in preset mode at a preset start time and stop at a preset stop time everyday. If timing stop time is set as the same as timing start time, a stop command will be executed.

(6) Dry and mildew proof function

Dry and mildew proof function can be set in cooling and dehumidification modes.

(7) Control of indoor fan

Indoor fan can be set at four levels, super-high, high, middle and low, with a remote controller. When one level is set, the fanwill thus operate at such level. The fan can also be set at auto state.

(8) Power-failure memory function

What will be memorized includes modes, up and down wind blow, light, preset temperature, preset wind speed, general timing (no memory for moment timing), and Fahrenheit /Celsius degree. When the unit is powered on again after power failure, operation continues according to memorized content. If timing is not set by the last remote control command, the system will memorize the last remote control command and operate in the mode specified in the last remote control command. If timing is set by the last remote control command and power failure happens before the preset time, the system, as powered on again, will memorize the timing function set by the last remote control command. Timing will be re-counted from the time at which the system is powered again. If timing is set by the last remote control command and timing of start or stop is reached before power failure, the system, as powered on again, will memorize operation state before power failure and will not perform timing action. Moment timing is out the range of memory.

(9) Locked Protection of indoor fan

When starting up the fans, if the motor has run at a lower speed continuously for a period, for preventing automatic protection of the motor, stop running, and display the locked operation; if the machine is running at present, the code of the locked fault---H6 of double-eight digital tubes will be displayed; if the machine is shut down at present, the information of the locked fault will not be displayed. (10) Super Power Function

In cooling and heating modes (automatic, dehumidifying and air-supplying modes are without strong power), press the button of Super Power, the wind speed on the remote controller is displayed as super-high air flow, and the inner fans are also turned to super-high air flow:

(11) Health Function

When the inner fans are running, the remote controller is set at the Health function at this time (if there is no Health button on the remote controller, the Health On order is defaulted), then start the Health function device.

- 3. Fault Detection of Thermo-bulb
- (1) Indoor Environment Thermo-bulb: Detect the fault of thermo-bulb at any time;
- (2) Indoor Pipe Temperature Thermo-bulb: During the defrosting period, the fault of the thermo-bulb will be not detected, which shall be detected in 5 minutes after defrosting is completed; the fault of the thermo-bulb will be detected at other times;
- (3) Protecting Treatments of Thermo-bulb
- 1.When the thermo-bulb is detected to be short-circuited continuously for 30 seconds: It is regarded that the temperature detected by the thermo-bulb is over-high (or unlimited), then the whole machine will exert corresponding safety stops according to the over-high temperature sensed by the thermo-bulb, and display corresponding temperature safety stops and faults of the thermo-bulb simultaneously.
- 2. When the thermo-bulb is detected in open circuit continuously for 30 seconds: stop the machine in protection, directly display corresponding faults of the thermo-bulb.
- 4. Forced Running Function of the Indoor Units
- (1) Enter into Forced Running Control Within 5 minutes after power-up, press the Lights Off button on the remote controller continuously for three times within 3 seconds to enter into the fluorine collecting mode, and display Fo, send the fluorine-collecting mode for 25 minutes continuously, each load will be treated as cooling when starting the machine (set the air flow as High, set the temperature as 61 °F).
- (2) Exit from the Forced Running Control After receiving any remote signal, or signal of keys, the fluorine-collecting mode will exit, and operate in accordance with the current orders set; or exit the fluorine-collecting mode after running for 25 minutes, and the machine will be shut down automatically.

7. Installation Manual

7.1 Notices for Installation

Caution

- 1. The unit should be installed only by authorized service center according to local or government regulations and in compliance with this manual.
- 2.Before installing, please contact with local authorized maintenance center. If the unit is not installed by the authorized service center, the malfunction may not be solved due to incovenient contact between the user and the service personnel.
- 3. When removing the unit to the other place, please firstly contact with the local authorized service center.
- 4. Warning: Before obtaining access to terminals, all supply circuits must be disconnected.
- 5. For appliances with type Y attachment, the instructions shall contain the substance of the following. If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- 6. The appliance must be positioned so that the plug is accessible.
- 7. The temperature of refrigerant line will be high; please keep the interconnection cable away from the copper tube.
- 8. The instructions shall state the substance of the following:

This appliance is not intended for use by persons(including children)with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the appliance.

7.1.1 Installation Site Instructions

Proper installation site is vital for correct and efficient operation of the unit. Avoid the following sites where:

- •strong heat sources, vapours, flammable gas or volatile liquids are emitted.
- •high-frequency electro-magnetic waves are generated by radio equipment, welders and medical equipment.
- •salt-laden air prevails (such as close to coastal areas).
- •the air is contaminated with industrial vapours and oils.
- •the air contains sulphures gas such as in hot spring zones.
- •corrosion or poor air quality exists.

7.1.2 Installation Site of Indoor Unit

- 1. The air inlet and outlet should be away from the obstructions. Ensure the air can be blown through the whole room.
- 2. Select a site where the condensate can be easily drained out, and where it is easily connected to outdoor unit.
- 3. Select a place where it is out of reach of children.
- 4.Select a place where the wall is strong enough to withstand the full weight and vibration of the unit.
- 5.Be sure to leave enough space to allow access for routine maintenance. The installation site should be 66in. or more above the floor.
- 6.Select a place about 3.3ft. or more away from TV set or any other electric appliance.
- 7. Select a place where the filter can be easily taken out.
- 8. Make sure that the indoor unit is installed in accordance with installation dimension instructions.
- 9.Do not use the unit in the laundry or by swimming pool etc.

7.1.4 Safety Precautions for Electric Appliances

- 1.A dedicated power supply circuit should be used in accordance with local electrical safety regulations.
- 2.Don't drag the power cord with excessive force.
- 3. The unit should be reliably earthed and connected to an exclusive earth device by the professionals.
- 4. The air switch must have the functions of magnetic tripping and heat tripping to prevent short circuit and overload.
- 5. The minimum distance between the unit and combustive surface is 59.1 in...
- 6. The appliance shall be installed in accordance with national wiring regulations.
- 7.An all-pole disconnection switch with a contact separation of at least 0.1in. in all poles should be connected in fixed wiring.

Note:

- •Make sure the live wire, neutral wire and earth wire in the family power socket are properly connected. There should be reliable circuit in the diagram.
- •Inadequate or incorrect electrical connections may cause electric shock or fire.

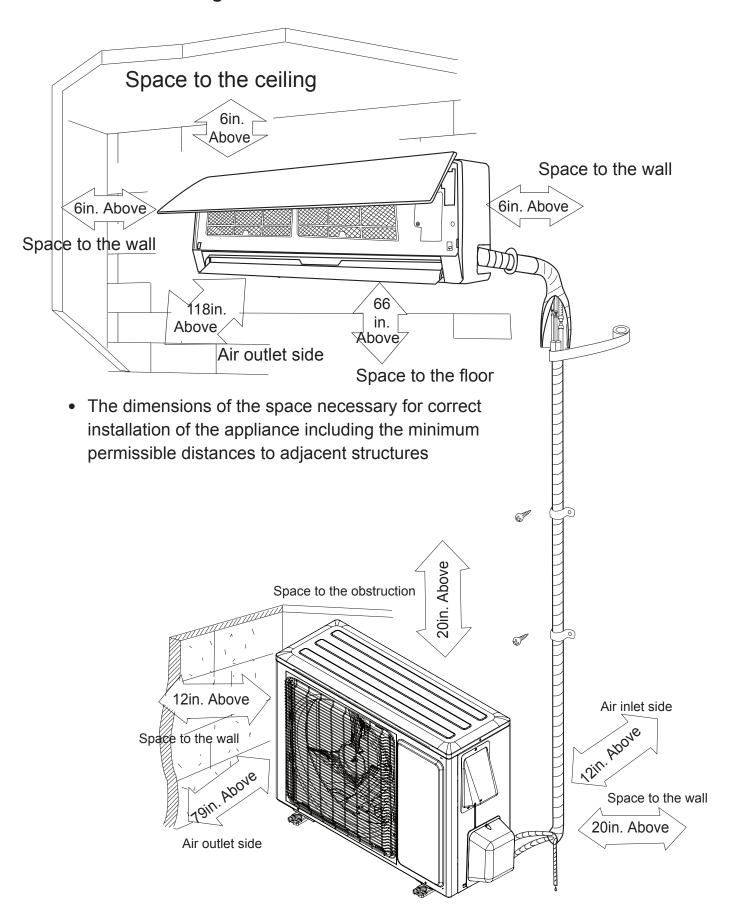
7.1.5 Earthing Requirements

- 1. Air conditioner is type I electric appliance. Please ensure that the unit is reliably earthed.
- 2. The yellow-green wire in air conditioner is the earthing wire which can not be used

for other purposes. Improper earthing may cause electric shock.

- 3. The earth resistance should accord to the national criterion.
- 4.The power must have reliable earthing terminal. Please do not connect the earthing wire with the following:
- ① Water pipe ② Gas pipe ③ Contamination pipe
- ④ Other place that professional personnel consider is unreliable
- 5. The model and rated values of fuses should accord with the silk print on fuse cover or related PCB.

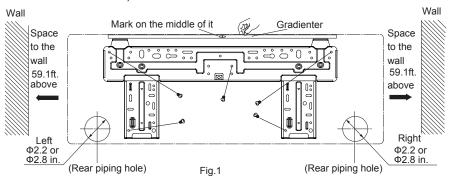
7.2 Installation Drawing



7.3 Install Indoor Unit

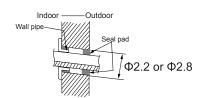
7.3.1 Installation of Mounting Plate

- 1. Mounting plate should be installed horizontally. As the water tray's outlet for the indoor unit is two-way type, during installation, the indoor unit should slightly slant to water tray's outlet for smooth drainage of condensate.
- 2.Fix the mounting plate on the wall with screws.
- 3.Be sure that the mounting plate has been fixed firmly enough to withstand about 132ib. Meanwhile, the weight should be evenly shared by each screw. (The hole for 24K is Φ 2.8 in.)



7.3.2 Drill Piping Hole

- 1.Slant the piping hole (Φ 2.2 in.) on the wall slightly downward to the outdoor side.(The hole for 24K is Φ 2.8 in.)
- 2.Insert the piping-hole sleeve into the hole to prevent the connection piping and wiring from being damaged when passing through the hole.



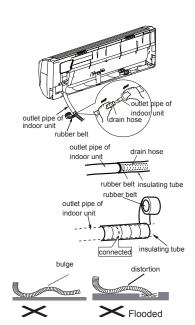
7.3.3 Installation of Drain Hose

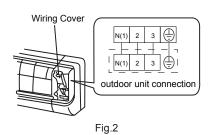
- 1. Connect the drain hose to the outlet pipe of the indoor unit. Bind the joint with rubber belt.
- 2.Put the drain hose into insulating tube.
- 3. Wrap the insulating tube with wide rubber belt to prevent the shift of insulating tube. Slant the drain hose downward slightly for smooth drainage of condensate.

Note: The insulating tube should be connected reliably with the sleeve outside the outlet pipe. The drain hose should be slanted downward slightly, without distortion, bulge or fluctuation. Do not put the outlet in the water.

7.3.4 Connecting Indoor and Outdoor Electric Wires

- 1. Open the front panel.
- 2.Remove the wiring cover .Connect and fix the power connection cord to the terminal board. as shown in Fig.2.
- 3. Make the power connection cord pass through the hole at the back of indoor unit.
- 4. Reinstall the cord anchorage and wiring cover.
- 5.Reinstall the front panel.





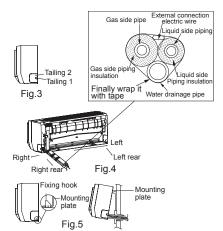
NOTE:

All wires between indoor and outdoor units must be connected by the qualified electric contractor.

- Electric wires must be connected correctly. Improper connection may cause malfunction.
- Tighten the terminal screws securely.
- After tightening the screws, pull the wire slightly to confirm whether it's firm or not.
- Make sure that the electric connections are earthed properly to prevent electric shock.
- Make sure that all wiring connections are secure and the cover plates are reinstalled properly. Poor installation may cause fire or electric shock.

7.3.5 Installation of Indoor Unit

- •The piping can be output from right, right rear, left or left rear.
- 1. When routing the piping and wiring from the left or right side of indoor unit, cut off the tailings from the chassis when necessary. (As shown in Fig. 3)
- (1)Cut off tailing 1 when routing the wiring only;
- (2) Cut off tailing 1 and tailing 2 when routing both the wiring and piping.
- 2. Take out the piping from body case; wrap the piping, power cords, drain hose with the tape and then make them pass through the piping hole. (As shown in Fig. 4)
- 3. Hang the mounting slots of the indoor unit on the upper hooks of the mounting plate and check if it is firm enough. (As shown in Fig.5)
- 4. The installation site should be 250cm or more above the floor.



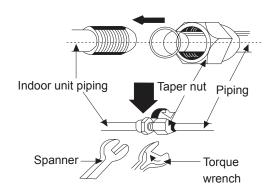
7.3.6 Installation of Connection Pipe

1. Align the center of the pipe flare with the related valve.

2.Screw in the flare nut by hand and then tighten the nut with spanner and torque wrench by referring to the following:

Hex nut diameter	Tightening torque(N·m)
Ф6	$30\sim40$
Ф9.52	15 \sim 20
Ф12	45 \sim 55
Ф16	$60\sim65$
Ф19	70 ~ 75

NOTE: Connect the connection pipe to indoor unit at first and then to outdoor unit. Handle piping bending with care. Do not damage the connection pipe. Ensure that the joint nut is tightened firmly, otherwise, it may cause leakage.



7.5.2 Operation Test

- 1.Before Operation Test
- (1)Do not switch on power before installation is finished completely.
- (2) Electric wiring must be connected correctly and securely.
- (3)Cut-off valves of the connection pipes should be opened.
- (4)All the impurities such as scraps and thrums must be cleared from the unit.
- 2. Operation Test Method
- (1)Switch on power and press "ON/OFF"button on the remote controller to start operation.
- (2) Press MODE button to select the COOL, HEAT (Not available for cooling only unit), FAN to check whether the operation is normal or not.

7.6 Installation and Maintenance of Healthy Filter

7.6.1 Installation of Healthy Filter

1. Lift up the front panel from its two ends, as shown by the arrow direction, and then remove the air filter. (As shown in fig.a)

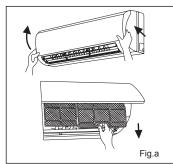
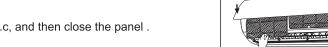


Fig.b Air filter Healthy filter

Fig.c



2. Attach the healthy filter onto the air filter. (As shown in fig.b)

3.Install the air filter properly along the arrow direction in Fig.c, and then close the panel .

7.6.2 Cleaning and Maintenance

Remove the healthy filter and reinstall it after cleaning according to the installation instruction. Don't use brush or hard things to clean the filter. After cleaning, be sure to dry it in the shade.

7.6.3 Service Life

The general serive life for the healthy filter is about one year under normal condition. As for silver ion filter, it is invalid when its surface becomes black (green).

•This supplementary instruction is provided for reference to the unit with healthy filter. If the graphics provided herein is different from the actual product, please refer to the atual product. The quantity of healthy filters is based on the actual delivery.